

DRAFT

Comments on Decadal Input Process – Jim Green. 18 Feb, 2015

Below are my thoughts on how I would like to see the decadal input process proceed. I want to emphasize that these are my personal views, and I may well be in the minority, (perhaps even a minority of 1) and we may wind up with a very different process. But I felt I should make my own opinions clear as a basis for discussion.

I believe that flagship missions should be “Observatories” and need to be designed to serve the astronomical community for decades. As such they should be capability driven – and not necessarily driven by a single science question. I am not a fan of the “killer app” concept for flagship missions. Specific science questions can be used to drive the design and capability, but I want another HST/Chandra – with broad capabilities that can be used for decades as new questions arise, and not so uniquely designed and optimized around a single science goal that it is less useful for broad applications.

I believe it is foolish to try and define the science problems that will dominate astronomy in 2037 – when this mission is launched. That’s 22 years from now. What was the state of astronomy 22 years ago – 1993 – and were the identified “key science” questions then what we are concerned with today?

Astronomy has two basic tools: imaging and spectroscopy. And despite desires to make it otherwise – technology is wavelength driven and therefore, observatories are wavelength driven. My own view is that we should endorse studies of three observatories:

These should have large FOV’s / exquisite angular resolution / integral field spectroscopy / high resolution spectroscopy

“Cold” IR (JWST band or redder – but cryo coolers, not cryogen, for maximum lifetime.

UV/Optical/”warm” IR (basically HST band) – if you chill the mirror you make a contamination magnet that will kill the UV

X-ray with real spectroscopy ($R > 10,000$), the ability to image accretion disks, and the effective area to support it

The decadal will choose which one of these is the most compelling and realistic *The community should be asked for science cases to justify the required angular/spectral resolution and sensitivity.* Then we need to do sanity check design as a lead-in to SDT’s.

The exo-planet imager should be a probe class dedicated mission.